

WHAT IS CLAIMED IS:

1. A content information management apparatus comprising:

5 a collection processing unit which collects content information items indicating attributes of contents stored in different specific forms in storage devices connected to networks using different protocols;

10 a conversion processing unit which converts each of the content information items collected by the collection processing unit into content information of a standardized form; and

a display which displays the content information.

15 2. The content information management apparatus according to claim 1, wherein the conversion processing unit includes a plurality of conversion processors which are provided according to types of the networks to be connected.

20 3. The content information management apparatus according to claim 2, wherein said collection processing unit comprises a plurality of collection processors which collect said content information items from the storage devices connected to corresponding ones of the networks.

25 4. The content information management apparatus according to claim 3, further comprising an information creating unit which creates information by unifying

content information items of each standardized form  
output from each of the plurality of collection  
processors.

5        5. A content information management method  
comprising:

collecting a content information item indicating  
an attribute of content stored in a first form in a  
first storage device connected to a network using a  
first protocol and a content information item  
10       indicating an attribute of content stored in a second  
form in a second storage device connected to a network  
using a second protocol; and

displaying each of the collected content  
information items in a standardized form.

15       6. The content information management method  
recording to claim 5, further comprising creating a  
play list based on the collected content information  
items and displaying the play list.

20       7. The content information management method  
according to claim 6, further comprising sequentially  
reproducing and outputting individual content indicated  
on the display of the play list from a corresponding  
one of the storage devices.

25       8. The content information management method  
according to claim 6, further comprising converting  
control information from a certain device into control  
information which is capable of being dealt with in the

standardized form, and performing a process  
corresponding to the converted control information.

5 9. A content information management apparatus in  
which a plurality of devices using different protocols  
are connected via networks, comprising:

an inquiry receiving unit which receives from an  
arbitrary one of the plurality of devices an inquiry  
relating to content information held in another one of  
the plurality of devices and returns a result of the  
10 inquiry; and

an inquiry processing unit which acquires content  
information items held in the plurality of devices  
based on inquiry protocols of the respective devices,  
converts the content information items into a  
15 standardized form and holds the converted content  
information, retrieves the converted content  
information according to the inquiry received by the  
inquiry receiving unit and returns a result which  
satisfies a condition to the inquiry receiving unit as  
20 an inquiry response.

10. The content information management apparatus  
according to claim 9, wherein the inquiry processing  
unit acquires an inquiry result by making an inquiry by  
use of an inquiry protocol of a targeted device via a  
25 network.

11. The content information management apparatus  
according to claim 9, wherein the inquiry processing

unit creates a reproduction list of contents held in each device in a standardized form based on the converted content information and returns the reproduction list as an inquiry response to the inquiry receiving unit when receives from one of the plurality of devices a display request for a reproduction list of contents held in another ones of the plurality of devices.

12. The content information management apparatus according to claim 11, further comprising a reproducing unit which is capable of sequentially acquiring contents described in the reproduction list from the corresponding devices and output the acquired contents to the arbitrary one of the plurality of devices.

13. A content information management apparatus in which a first device and at least one second device which holds content information being not accessible from the first device are connected via networks, comprising:

a communicating unit capable of performing communication with the first device and the at least one second device,

an inquiry receiving unit which receives an inquiry relating to content information of the at least one second device from the first device via the communicating unit and returns a result of the inquiry; and

at least one inquiry processing unit which is provided for the at least one second device and processes the inquiry received by the inquiry receiving unit,

5            wherein the inquiry receiving unit selects one of the at least one inquiry processing unit according to the inquiry, leaves an inquiry process up to the selected inquiry processing unit, waits for a processing result of the selected inquiry processing  
10           unit, receives the processing result and notifies the first device of the processing result as an inquiry result via the communicating unit, and

the selected inquiry processing unit includes:

(1) a detection processing unit which detects the  
15           second device on a network which is capable of being inquired by use of an inquiry protocol of the second device in advance or when an inquiry is received,

(2) a searching unit which: (a) acquires content information held in the second device detected by the  
20           detection processing unit based on the inquiry protocol of the second device, (b) converts the content information into a standardized form and (c) holds the converted content information, and

(3) the selected inquiry processing unit retrieves  
25           the converted content information acquired by and held in the searching unit according to the inquiry and a property of the second device and returns a result

which satisfies a condition to the inquiry receiving unit as an inquiry response.

14. The content information management apparatus according to claim13, wherein the inquiry processing  
5 unit acquires an inquiry result by making an inquiry with respect to the second device detected by the device detection processing unit based on the inquiry protocol of the second device.

15. A content information management method  
10 applied to a content information management apparatus in which a plurality of devices using different protocols are connected via networks, comprising:

receiving from an arbitrary one of the plurality of devices an inquiry relating to content information  
15 held in another one of the plurality of devices;

acquiring content information items held in the plurality of devices based on inquiry protocols of the respective devices,

20 converting the content information items into a standardized form,

storing the converted content information,  
retrieving the converted content information according to the received inquiry;

25 acquiring a result among the converted content information; and

transmitting the acquired result to the arbitrary one of the plurality of devices.

16. The content information management method according to claim 15, wherein acquiring the result includes acquiring an inquiry result by making an inquiry by use of an inquiry protocol of a targeted device via a network.

17. The content information management method according to claim 15, wherein acquiring said result includes creating a reproduction list of contents held in each device in a standardized form based on the converted content information and returning the reproduction list as an inquiry response to the arbitrary one of the plurality of devices, when said arbitrary one of the plurality of devices issues a display request for a reproduction list of contents held in another ones of the plurality of devices.

18. The content information management method according to claim 17, further comprising sequentially acquiring contents described in the reproduction list from the corresponding devices and output the acquired contents to the arbitrary one of the plurality of devices.

19. A content information management method applied to a content information management apparatus in which a first device and at least one second device which holds content information being not accessible from the first device are connected via networks, comprising:

receiving an inquiry relating to content  
information of the at least one second device from the  
first device via a communication medium,

5 detecting the at least one second device on a  
network which is capable of being inquired by use of an  
inquiry protocol of the at least one second device in  
advance or when the inquiry is received,

acquiring content information held in the detected  
at least one second device based on the inquiry  
10 protocol of the at least one second device, converting  
the acquired content information into a standardized  
form content information and storing the same, and

retrieving the stored standardized content  
information according to the inquiry and a property of  
15 the second device and returning a result which  
satisfies a condition to the first device as an inquiry  
response.

20. The content information management method  
according to claim 19, further including acquiring an  
20 inquiry result by making an inquiry with respect to the  
detected at least one second device based on the  
inquiry protocol of the at least one second device.

21. A content information management apparatus  
comprising:

25 collection processing means for collecting content  
information items indicating attributes of contents  
stored in different specific forms in storage devices



connected to networks using different protocols;

conversion processing means for converting each of  
the content information items collected by the  
collection processing means into content information of  
5 a standardized form; and

means for displays the content information.

22. A content information management apparatus  
comprising:

10 a data processing unit operative under program  
control for:

(1) collecting content information items  
indicating attributes of contents stored in different  
specific forms in storage devices connected to networks  
using different protocols;

15 (2) converting each of the content information  
items collected by the collection processing unit into  
content information of a standardized form; and

a display coupled to said data processing unit for  
displaying the content information.